

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 24, 2011 has been entered.

### *Status of Claims*

2. **Claims 37 and 41-60** are pending.
3. **Claims 1-36, 38-40, 44 and 46** are canceled.

### *Claim Rejections - 35 USC § 112*

4. Applicants' amendment(s) have overcome the rejection(s) of **claim 46** under 35 U.S.C. § 112, second paragraph.

### *Claim Rejections - 35 USC § 102*

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. **Claims 37, 41, 42, 45, 48, 49, 52-55, 57, 58 and 60** are rejected under 35 U.S.C. 102(b) as being anticipated by Yasunami (U.S. 6,371,995 B1).

Regarding **claim 37**, Yasunami discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 1) having

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at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolytic solution, abstract), comprising:

- particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of:
  - an Si oxide (see SiO, C7/L65-C8/L3) and
  - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C10/L52-59).

Regarding **claim 41**, Yasunami discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the Si oxide is expressed in  $\text{SiO}_z$ ,  $0.8 \leq z \leq 2$  (see SiO, C7/L65-C8/L3).

Regarding **claim 42**, Yasunami discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- further comprising lithium metal (see lithium, C7/L65-C8/L3).

Regarding **claim 45**, Yasunami discloses an anode (2) for a secondary battery (Fig. 1), comprising:

- an activator layer (see negative electrode sheet, C4/L31-47) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C7/L19-29),
- wherein the anode material (see negative electrode material, abstract) comprises

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- particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of:
  - an Si oxide (see SiO, C7/L65-C8/L3) and
  - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C10/L52-59).

Regarding **claim 48**, Yasunami discloses a non-aqueous electrolytic-solution secondary battery (Fig. 1) comprising:

- an anode (2) comprising:
  - an activator layer (see negative electrode sheet, C4/L31-47) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C7/L19-29),
  - wherein the anode material (see negative electrode material, abstract) comprises
    - particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of:
      - an Si oxide (see SiO, C7/L65-C8/L3) and
      - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C10/L52-59).

Regarding **claim 49**, Yasunami discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein the particulate composite has a structure where at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re is present in a matrix of the Si oxide (see dopants, C10/L52-59).

Regarding **claim 52**, Yasunami discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolytic solution, abstract), comprising:

- a particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of
  - a lithium silicate (C7/L65-C8/L3) and
  - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C10/L52-59).

Regarding **claim 53**, Yasunami discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the lithium silicate is expressed in  $\text{Li}_x\text{SiO}_y$ ,  $0 < x$  and  $0 \leq y \leq 4$  (C7/L65-C8/L3).

Regarding **claim 54**, Yasunami discloses all claim limitations set forth above and further discloses an anode material for a secondary battery further comprising:

- lithium metal (C4/L31-46).

Regarding **claim 55**, Yasunami discloses an anode (2) for a secondary battery, comprising:

- an activator layer (see negative electrode sheet, C4/L31-47) which comprises
  - an anode material (see negative electrode material, abstract) on at least one side of an anode collector (see current collector, C7/L19-29);
- wherein the anode material (see negative electrode material, abstract) comprises
  - a particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of
    - a lithium silicate (C7/L65-C8/L3) and
    - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C10/L52-59).

Regarding **claim 57**, Yasunami discloses a non-aqueous electrolytic-solution secondary battery (Fig. 1) comprising:

- an anode (2) for a secondary battery, comprising:
  - an activator layer (see negative electrode sheet, C4/L31-47) which comprises
    - an anode material (see negative electrode material, abstract) on at least one side of an anode collector (see current collector, C7/L19-29);
  - wherein the anode material (see negative electrode material, abstract) comprises

- a particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of
  - a lithium silicate (C7/L65-C8/L3) and
  - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C10/L52-59).

Regarding **claim 58**, Yasunami discloses all claim limitations set forth above and further discloses an anode material:

- wherein the particulate composite has a structure where at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re is present in a matrix of the lithium silicate (see dopants, C10/L52-59).

Regarding **claim 60**, Yasunami discloses all claim limitations set forth above and further discloses an anode material:

- wherein the particulate composite has a structure where the particulate lithium silicate and at least one particulate metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re are aggregated (see dopants, C10/L52-59).

7. **Claims 37, 41, 42, 45, 48, 49, 52-55, 57, 58 and 60** are rejected under 35 U.S.C. 102(b) as being anticipated by Tomiyama et al. (U.S. 6,053,953 B1).

Regarding **claim 37**, Tomiyama et al. discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolyte, abstract), comprising:

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- particulate composite (see negative electrode material, C9/L1-14) which comprises a mixture of:
  - an Si oxide (see SiO, C9/L43-49) and
  - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C13/L40-46).

Regarding **claim 41**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the Si oxide is expressed in  $\text{SiO}_z$ ,  $0.8 \leq z \leq 2$  (see SiO, C9/L43-49).

Regarding **claim 42**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- further comprising lithium metal (see lithium, C9/L43-49).

Regarding **claim 45**, Tomiyama et al. discloses an anode (2) for a secondary battery (Fig. 1), comprising:

- an activator layer (see negative electrode material mixture, C5/L41-50) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C5/L41-50),
- wherein the anode material (see negative electrode material, abstract) comprises
  - particulate composite (see negative electrode material, C9/L1-14) which comprises a mixture of:
    - an Si oxide (see SiO, C9/L43-49) and

- at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C13/L40-46).

Regarding **claim 48**, Tomiyama et al. discloses a non-aqueous electrolytic-solution secondary battery (Fig. 1) comprising:

- an anode (2) comprising:
  - an activator layer (see negative electrode material mixture, C5/L41-50) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C5/L41-50),
  - wherein the anode material (see negative electrode material, abstract) comprises
    - particulate composite (see negative electrode material, C9/L1-14) which comprises a mixture of:
      - an Si oxide (see SiO, C9/L43-49) and
      - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C13/L40-46).

Regarding **claim 49**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein the particulate composite has a structure where at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re is present in a matrix of the Si oxide (see dopants, C13/L40-46).

Regarding **claim 52**, Tomiyama et al. discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolyte, abstract), comprising:

- a particulate composite (see negative electrode material, C9/L1-14) which comprises a mixture of
  - a lithium silicate (C9/L43-49) and
  - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C13/L40-46).

Regarding **claim 53**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the lithium silicate is expressed in  $\text{Li}_x\text{SiO}_y$ ,  $0 < x$  and  $0 \leq y \leq 4$  (C9/L43-49).

Regarding **claim 54**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery further comprising:

- lithium metal (C5/L26-40).

Regarding **claim 55**, Tomiyama et al. discloses an anode (2) for a secondary battery, comprising:

- an activator layer (see negative electrode material mixture, C5/L41-50) which comprises
  - an anode material (see negative electrode material, abstract) on at least one side of an anode collector (see current collector, C5/L41-50);

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- wherein the anode material (see negative electrode material, abstract) comprises
  - a particulate composite (see negative electrode material, C9/L1-14) which comprises a mixture of
    - a lithium silicate (C9/L43-49) and
    - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C13/L40-46).

Regarding **claim 57**, Tomiyama et al. discloses a non-aqueous electrolytic-solution secondary battery (Fig. 1) comprising:

- an anode (2) for a secondary battery, comprising:
  - an activator layer (see negative electrode material mixture, C5/L41-50) which comprises
    - an anode material (see negative electrode material, abstract) on at least one side of an anode collector (see current collector, C5/L41-50);
  - wherein the anode material (see negative electrode material, abstract) comprises
    - a particulate composite (see negative electrode material, C9/L1-14) which comprises a mixture of
      - a lithium silicate (C9/L43-49) and
      - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C13/L40-46).

Regarding **claim 58**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material:

- wherein the particulate composite has a structure where at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re is present in a matrix of the lithium silicate (see dopants, C13/L40-46).

Regarding **claim 60**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material:

- wherein the particulate composite has a structure where the particulate lithium silicate and at least one particulate metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re are aggregated (see dopants, C13/L40-46).

8. **Claims 37, 41, 42, 45, 48, 52, 53, 55 and 57** are rejected under 35 U.S.C. 102(b) as being anticipated by Asanuma et al. (U.S. 6,001,139 A).

Regarding **claim 37**, Asanuma et al. discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 2) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolyte, abstract), comprising:

- particulate composite (see negative electrode material, C11/L1-13) which comprises a mixture of:
  - an Si oxide (see SiO, C11/L40-46) and
  - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see metals, C15/L31-37).

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Regarding **claim 41**, Asanuma et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the Si oxide is expressed in  $\text{SiO}_z$ ,  $0.8 \leq z \leq 2$  (see SiO, C11/L40-46).

Regarding **claim 42**, Asanuma et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- further comprising lithium metal (see lithium, C11/L40-46).

Regarding **claim 45**, Asanuma et al. discloses an anode (2) for a secondary battery (Fig. 2), comprising:

- an activator layer (see material mixture, C8/L54-67) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 2) on at least one side of an anode collector (see current collector, C8/L54-67),
- wherein the anode material (see negative electrode material, abstract) comprises
  - particulate composite (see negative electrode material, C11/L1-13) which comprises a mixture of:
    - an Si oxide (see SiO, C11/L40-46) and
    - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see metals, C15/L31-37).

Regarding **claim 48**, Asanuma et al. discloses a non-aqueous electrolytic-solution secondary battery (Fig. 2) comprising:

- an anode (2) comprising:
  - an activator layer (see material mixture, C8/L54-67) which comprises an anode material (see negative electrode material, abstract) for a secondary

battery (Fig. 2) on at least one side of an anode collector (see current collector, C8/L54-67),

- wherein the anode material (see negative electrode material, abstract) comprises
  - particulate composite (see negative electrode material, C11/L1-13) which comprises a mixture of:
    - an Si oxide (see SiO, C11/L40-46) and
    - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see metals, C15/L31-37).

Regarding **claim 52**, Asanuma et al. discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 2) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolyte, abstract), comprising:

- a particulate composite (see negative electrode material, abstract) which comprises a mixture of
  - a lithium silicate (C11/L40-46) and
  - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C15/L31-37).

Regarding **claim 53**, Asanuma et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

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- wherein when the lithium silicate is expressed in  $\text{Li}_x\text{SiO}_y$ ,  $0 < x$  and  $0 \leq y \leq 4$  (C11/L40-46).

Regarding **claim 55**, Asanuma et al. discloses an anode (2) for a secondary battery, comprising:

- an activator layer (see material mixture, C8/L54-67) which comprises
  - an anode material (see negative electrode material, abstract) on at least one side of an anode collector (see current collector, C8/L54-67);
- wherein the anode material (see negative electrode material, abstract) comprises
  - a particulate composite (see negative electrode material, abstract) which comprises a mixture of
    - a lithium silicate (C11/L40-46) and
    - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C15/L31-37).

Regarding **claim 57**, Asanuma et al. discloses a non-aqueous electrolytic-solution secondary battery comprising:

- an anode (2) for a secondary battery, comprising:
  - an activator layer (see material mixture, C8/L54-67) which comprises
    - an anode material (see negative electrode material, abstract) on at least one side of an anode collector (see current collector, C8/L54-67);
  - wherein the anode material (see negative electrode material, abstract) comprises

- a particulate composite (see negative electrode material, abstract)  
which comprises a mixture of
  - a lithium silicate (C11/L40-46) and
  - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C15/L31-37).

9. **Claims 37, 41, 42, 45, 48, 52-55 and 57** are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (U.S. 5,707,756 A).

Regarding **claim 37**, Inoue et al. discloses an anode material (see negative electrode material, abstract) for an anode (4) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (4), a cathode (5) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolyte, C6/L19-27), comprising:

- particulate composite (see negative electrode material, C21/L1-15) which comprises a mixture of:
  - an Si oxide (see silicon dioxide, C21/L1-15) and
  - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see metals, C22/L50-60).

Regarding **claim 41**, Inoue et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the Si oxide is expressed in  $\text{SiO}_z$ ,  $0.8 \leq z \leq 2$  (see silicon dioxide, C21/L1-15).

Regarding **claim 42**, Inoue et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- further comprising lithium metal (see lithium, C21/L26-32).

Regarding **claim 45**, Inoue et al. discloses an anode (4) for a secondary battery (Fig. 1), comprising:

- an activator layer (see negative electrode composition, C24/L21-30) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C24/L21-30),
- wherein the anode material (see negative electrode material, abstract) comprises
  - particulate composite (see negative electrode material, C21/L1-15) which comprises a mixture of:
    - an Si oxide (see silicon dioxide, C21/L1-15) and
    - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see metals, C22/L50-60).

Regarding **claim 48**, Inoue et al. discloses a non-aqueous electrolytic-solution secondary battery (Fig. 1) comprising:

- an anode (4) comprising:
  - an activator layer (see negative electrode composition, C24/L21-30) which comprises an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C24/L21-30),

- wherein the anode material (see negative electrode material, abstract) comprises
  - particulate composite (see negative electrode material, C21/L1-15) which comprises a mixture of:
    - an Si oxide (see silicon dioxide, C21/L1-15) and
    - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see metals, C22/L50-60).

Regarding **claim 52**, Inoue et al. discloses an anode material (see negative electrode material, abstract) for an anode (4) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (4), a cathode (5) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolyte, C6/L19-27), comprising:

- a particulate composite (see negative electrode material, C21/L1-15) which comprises a mixture of
  - a lithium silicate (C21/L26-30) and
  - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C22/L50-60).

Regarding **claim 53**, Inoue et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when the lithium silicate is expressed in  $\text{Li}_x\text{SiO}_y$ ,  $0 < x$  and  $0 \leq y \leq 4$  (C21/L26-30).

Regarding **claim 54**, Inoue et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery further comprising:

- lithium metal (C29/L9-36).

Regarding **claim 55**, Inoue et al. discloses an anode (4) for a secondary battery, comprising:

- an activator layer (see negative electrode composition, C24/L21-30) which comprises
  - an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C24/L21-30)
- wherein the anode material (see negative electrode material, abstract) comprises
  - a particulate composite (see negative electrode material, C21/L1-15) which comprises a mixture of
    - a lithium silicate (C21/L26-30) and
    - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C22/L50-60).

Regarding **claim 57**, Inoue et al. discloses a non-aqueous electrolytic-solution secondary battery comprising:

- an anode (4) for a secondary battery, comprising
  - an activator layer (see negative electrode composition, C24/L21-30) which comprises

- an anode material (see negative electrode material, abstract) for a secondary battery (Fig. 1) on at least one side of an anode collector (see current collector, C24/L21-30)
- wherein the anode material (see negative electrode material, abstract) comprises
  - a particulate composite (see negative electrode material, C21/L1-15) which comprises a mixture of
    - a lithium silicate (C21/L26-30) and
    - at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C22/L50-60).

10. **Claims 37 and 51** are rejected under 35 U.S.C. 102(a) as being anticipated by Nakagawa et al. (WO 2004/051784 A1; see English language equivalent, U.S. 2006/0068296 A1).

Regarding **claim 37**, Nakagawa et al. discloses an anode material (22) for an anode (2) in a non-aqueous electrolyte secondary battery (4) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous-electrolyte, abstract), comprising:

- particulate composite (22) which comprises a mixture of:
  - an Si oxide (see silicon oxides, [0044]) and
  - at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see gold, [0054]).

Regarding **claim 51**, Nakagawa et al. discloses all claim limitations set forth above and further discloses an anode material:

- wherein the particulate composite has a structure where the particulate Si oxide (see silicon oxides, [0044]) and at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see gold, [0054]) are aggregated (see mixing, [0058]).

***Claim Rejections - 35 USC § 103***

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasunami (U.S. 6,371,995 B1).

Regarding **claim 43**, Yasunami discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when a ratio of Si atoms to noble-metal atoms is expressed in a:b,  
 $0 < b/a < 0.05$  (see dopants, C10/L52-59).

Although Yasunami does not explicitly disclose a range of  $0.01 < b/a$ , Yasunami does disclose an overlapping range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

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13. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyama et al. (U.S. 6,053,953 B1).

Regarding **claim 43**, Tomiyama et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when a ratio of Si atoms to noble-metal atoms is expressed in a:b,  
 $0 < b/a < 0.05$  (see dopants, C13/L40-46).

Although Tomiyama et al. does not explicitly disclose a range of  $0.01 < b/a$ , Tomiyama et al. does disclose an overlapping range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

14. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over Asanuma et al. (U.S. 6,001,139 A).

Regarding **claim 43**, Asanuma et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when a ratio of Si atoms to noble-metal atoms is expressed in a:b,  
 $0 < b/a < 0.05$  (see metals, C15/L31-37).

Although Asanuma et al. does not explicitly disclose a range of  $0.01 < b/a$ , Asanuma et al. does disclose an overlapping range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges

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disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

15. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (U.S. 5,707,756 A).

Regarding **claim 43**, Asanuma et al. discloses all claim limitations set forth above and further discloses an anode material for a secondary battery:

- wherein when a ratio of Si atoms to noble-metal atoms is expressed in a:b,  
 $0 < b/a < 0.20$  (see metals, C22/L50-60).

Although Inoue et al. does not explicitly discloses a range of  $0.01 < b/a$ , Asanuma et al. does disclose an overlapping range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have selected the overlapping portion of the ranges disclosed by the reference because selection of overlapping portion of ranges has been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

16. **Claims 47 and 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasunami (U.S. 6,371,995 B1) as applied to claims 45 and 55 above, and further in view of Takada (U.S. 2004/0166409 A1).

Regarding **claim 47**, Yasunami discloses all claim limitations set forth above, but does not explicitly disclose an anode for a secondary battery:

- wherein a center-line average roughness (Ra) of the anode collector is 1/10 or more of a thickness of the anode collector.

Takada et al. discloses an anode (10) for a secondary battery (Fig. 2) wherein a center-line average roughness of the anode collector is 1/10 or more (see Example 2-4) of a thickness of the anode collector (11) to prevent the peeling of the anode active material layer from the current collector ([0022]). Yasunami and Takada et al. are analogous art because they are directed to lithium secondary batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the anode of Yasunami with the current collector of Takada et al. in order to prevent the peeling of the anode active material layer from the current collector.

17. **Claims 47 and 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyama et al. (U.S. 6,053,953 B1) as applied to claim 45 and 55 above, and further in view of Takada (U.S. 2004/0166409 A1).

Regarding **claims 47 and 56**, Tomiyama et al. discloses all claim limitations set forth above, but does not explicitly disclose an anode for a secondary battery:

- wherein a center-line average roughness (Ra) of the anode collector is 1/10 or more of a thickness of the anode collector.

Takada et al. discloses an anode (10) for a secondary battery (Fig. 2) wherein a center-line average roughness of the anode collector is 1/10 or more (see Example 2-4) of a thickness of the anode collector (11) to prevent the peeling of the anode active material layer from the current collector ([0022]). Tomiyama et al. and Takada et al. are analogous art because they are directed to lithium secondary batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the anode of Tomiyama et al. with the current

collector of Takada et al. in order to prevent the peeling of the anode active material layer from the current collector.

18. **Claims 47 and 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanuma et al. (U.S. 6,001,139 A) as applied to claims 45 and 55 above, and further in view of Takada (U.S. 2004/0166409 A1).

Regarding **claims 47 and 56**, Asanuma et al. discloses all claim limitations set forth above, but does not explicitly disclose an anode for a secondary battery:

- wherein a center-line average roughness (Ra) of the anode collector is 1/10 or more of a thickness of the anode collector.

Takada et al. discloses an anode (10) for a secondary battery (Fig. 2) wherein a center-line average roughness of the anode collector is 1/10 or more (see Example 2-4) of a thickness of the anode collector (11) to prevent the peeling of the anode active material layer from the current collector ([0022]). Asanuma et al. and Takada et al. are analogous art because they are directed to lithium secondary batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the anode of Asanuma et al. with the current collector of Takada et al. in order to prevent the peeling of the anode active material layer from the current collector.

19. **Claims 47 and 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (U.S. 5,707,756 A) as applied to claims 45 and 55 above, and further in view of Takada (U.S. 2004/0166409 A1).

Regarding **claims 47 and 56**, Inoue et al. discloses all claim limitations set forth above, but does not explicitly disclose an anode for a secondary battery:

- wherein a center-line average roughness (Ra) of the anode collector is 1/10 or more of a thickness of the anode collector.

Takada et al. discloses an anode (10) for a secondary battery (Fig. 2) wherein a center-line average roughness of the anode collector is 1/10 or more (see Example 2-4) of a thickness of the anode collector (11) to prevent the peeling of the anode active material layer from the current collector ([0022]). Inoue et al. and Takada et al. are analogous art because they are directed to lithium secondary batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the anode of Inoue et al. with the current collector of Takada et al. in order to prevent the peeling of the anode active material layer from the current collector.

#### *Allowable Subject Matter*

20. **Claims 50 and 59** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art of record is Yasunami (U.S. 6,371,995 B1).

Yasunami discloses an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolytic

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solution, abstract), comprising particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of n Si oxide (see SiO, C7/L65-C8/L3) and at least one noble-metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (see dopants, C10/L52-59); and an anode material (see negative electrode material, abstract) for an anode (2) in a non-aqueous electrolyte secondary battery (Fig. 1) having at least the anode (2), a cathode (1) and a lithium-ion conducting non-aqueous electrolyte (see nonaqueous electrolytic solution, abstract), comprising a particulate composite (see negative electrode material, C7/L44-47) which comprises a mixture of a lithium silicate (C7/L65-C8/L3) and at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re (C10/L52-59).

Yasunami does not disclose an anode material for a secondary battery wherein a particulate composite has a structure where Si oxide or lithium silicate is present in a matrix of at least one metal selected from the group consisting of Pd, Pt, Au, Rh, Ir, Ru, Os and Re.

### ***Response to Arguments***

22. Applicant's arguments filed October 24, 2011 have been fully considered but they are not persuasive.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

***Conclusion***

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Cullen, Ph.D. whose telephone number is (571)270-1251. The examiner can normally be reached on Monday thru Thursday 6:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. P. C./  
Examiner, Art Unit 1725

/Basia Ridley/  
Supervisory Patent Examiner, Art Unit 1725